State of California

97-A69

Memorandum

DEC 0 9 1997

To : Mr. Lester A. Snow
Executive Director
CALFED Bay-Delta Program

Date : December 1, 1997

From : **Department of Fish and Game**

Subject : Draft Delta Levee System Integrity Program

The Department of Fish and Game (DFG) has reviewed the Draft Delta Levee System Integrity Program (Program) report dated October 1997 and has the following comments. We have structured our comments first, as general overall comments about the report, followed by specific comments annotated by page and paragraph. We have highlighted those comments that we believe could affect the analyses in the draft programmatic EIR/EIS and therefore should be addressed prior to its release. They are marked with an asterisk (*). Other comments could be addressed at a later date.

General Comments

Overall, we find this report to be well done. It represents a comprehensive, well organized, and concisely presented summary of the Program. You, your staff, and supporting consultant team should be commended for a job well done.

Specific Comments

Page v; Oxidation: We suggest adding language to the definition which describes that conversion to carbon dioxide is primarily the result of aerobic soil bacteria.

Page vi; Stability Berm: We recommend that the definition include that this berm is typically placed on the landside of a levee.

Other terms used in this report should also be defined. They include; cut-off wall, rotational slide, and boil.

Page 2; First paragraph: We recommend deleting "and channels" in the first line since we are not sure it is accurate to describe potential "failure" of Delta Channels.

_____; **Third paragraph:** The second sentence states that because of levee settlement and shallow subsidence there has been a need to increase levee heights. This is not accurate. The process of levee settlement triggers the need to add levee material, and

in some cases, landside berms to "maintain" the necessary levee height. Shallow subsidence can result in the levee height relative to an islands's interior surface elevation to increase. A levee's height relative to sea level generally doesn't change unless increased flood protection is desired. We recommend that this be clarified in order to provide the reader with a clear basis for the implementation objectives, targets, and actions to follow for this Program. Clarification could be helped, for instance, by adding the phrase "relative to the island's interior surface elevation" after the work "height" in the last sentence of this paragraph.

Other parts of this report such as page A-2 of Appendix A should also be modified to address this concern.

Page 6: Last sentence should read, "Later SB 1065 and AB 360 amended SB 34."

Page 7; Figure 2: The figure should be modified to allow the reader to differentiate between lands above sea level and lands at sea level to -10 feet.

***Page 10; Implementation Strategy:** This section should be modified to address the following questions or concerns:

- Is it wise or can we justify upgrading the entire Delta to PL-99 standards?
- To what extent do the 1100 miles of Delta levees not meet PL-99 standards now?
- Reference to ecosystem integration should not be about continued investigations, but about implementation.

***Page 14:** Special Improvement Projects as described could work at cross purposes with the ERPP. The report should clarify how.

_____**; Last paragraph:** Priority criteria should include ERPP integration.

The third action listed describes modifying channel configurations. It isn't clear what this means in the context of a specific action for this Program. If it isn't clear, reference to it may need to be deleted or the linkage with the appropriate part of the CALFED Program identified.

***Page 19:** This Program states the ERPP will address beneficial reuse of dredge material.

The ERPP currently does not adequately address this issue in our opinion and will need to be modified to do so. The beneficial reuse portion of the ERPP would need to be sufficiently detailed to complete the programmatic EIR/EIS.

Appendix B

***Page B-2; First paragraph:** The language suggests that all Delta levees need to be reconstructed in order to achieve the selected standard (e.g. PL-99). The extent of reconstruction should be identified and/or the wording changed to state that levees will be reconstructed as needed to achieve the selected standard.

Second paragraph: The fourth line should read, "...with indirect ecosystem protection features."

Page B-2 and Figure B-1: Text should be added to generally describe the different levels of protection and to describe the consequences, if any, between meeting the FEMA standards (3.0 feet free board above 100 year flood) verses PL-99 (1.5 feet above 100 year flood) with regards to qualifying for federal disaster relief funds. The numbers designated 1.0', 1.5' and 3.0' on the waterside slopes should be labeled as the amount of free board.

***Figure B-2:** The configuration shown, while representing perhaps an alternative that provides effective levee improvement to address flood control, may not, as drawn, reflect a good example of how ecosystem restoration features can be integrated into levee reconstruction. Tules require periodic inundation while the drawing shows the area to be flooded only during flood conditions. Perhaps an error in reproduction from original has occurred which contributes to our concerns. Care must be taken to ensure that channel islands are not adversely affected and that shore and shallow water habitat impacts are addressed. Also adverse effects on habitat for wintering waterfowl associated with landside agriculture will need to be addressed .

This configuration should be modified and should be presented as a levee design that may require mitigation for adverse impacts on fish and wildlife habitat. Furthermore, based on our review of where this levee configuration is proposed (e.g. Figure B-6), we question whether there is a misunderstanding about this configuration. We recommend a completely different configuration that could show a smaller levee in the existing locations with a larger levee inland at some distance that would facilitate flood plain restoration. We would be happy to work with CALFED to prepare such a configuration.

Figure B-5: The title of this figure should be deleted. It does not result in improvements. Substitute "Protection" in its place.

***Figure B-6:** Configuration L (which is depicted as Figure B-2 in this document) is shown for extensive areas of the Delta where the typical cross section is not accurate. Most areas shown do not have an existing channel island behind which fill could be placed. We assume that this means that the type L levee treatment shown is not an accurate depiction of what is planned for these areas. A suitable cross section treatment for areas without channel islands should be presented.

***Figure B-6, B-7, and B-8:** There is no explanation or rationale presented for why the configuration or linear extent of alleged levee habitat improvement projects is different among the alternatives. Our review, in fact, suggests that the conceptual approaches shown may be flawed, and should be modified in order to adequately evaluate the program in the DEIR/EIS.

***Figure B-5:** Referencing Appendix G, Table 4-1, Levee type G is the wave wall design. The notes accompanying that design describe it as an interim measure that does not address most of the issues relative to levee stability. The report's text should be modified to more accurately reflect the limitation of this design and the lack of habitat improvements. It isn't clear to us why levee configuration I, maintenance of vegetation on Existing Levee Slopes isn't used more extensively, especially as both FEMA and OES have agreed to this configuration. An explanation should be provided in this report.

***Page B-2:** The examples given for integrating levee reconstruction and ecosystem restoration are described as "strictly preliminary" and subject to technical review. We are willing to assist in working through those technical issues. The configurations shown and levee methods described, however, are not likely to be useful for preparing the DEIR/EIS. These deficiencies need to be corrected so that the Program can be adequately evaluated.

Deficiencies include:

- Inappropriate levee reconstruction method. (Figure B-2, method L in figures 6 through 8.)

- Inappropriate siting of methods.

- Inappropriate selection of reconstruction methods intended to benefit the ecosystem.
- Lack of a reconstruction method to accommodate flood plain restoration targets from the ERPP.
- Lack of consistency among alternatives.

Appendix C

Page C-3; Fourth paragraph: The discussion of AB 360 should include reference to the stronger requirements for mitigation and enhancement of habitats such as riparian in association with levee work funded as part of the base-level program.

Page C-6: The last sentence should be modified to state that BDAC will advise CALFED on priorities for special-projects funding.

Appendix D

This appendix needs to be provided with an executive summary that presents the main findings of Steven Deverel's paper in a manner that is less technical and more easily understood by most readers.

Page D-6; Last paragraph: In our view, it isn't very practical to describe ranges of subsidence as high as 5 inches per year when averaged over the 60 to 72 years evaluated. Such rates would have resulted in extensive areas with surface elevations as low as 30 feet below sea level. While there are pockets as low as 25 feet, they are not common, and as cited in this paper, levee surfaces instead range from 6 to 21 feet below sea level. We recommend that the context of these higher rates of subsidence be carefully presented to avoid confusion.

Page D-20; Last paragraph: The last sentence which states that the distribution of peat thicknesses estimated 20 years ago applies today should be revisited since the calculated subsidence or loss of 2 to 4 feet of peat soils in the last 20 years would likely significantly affect the average distribution of peat soils greater or less than 10 feet. For instance, on Bacon Island, significant areas of mineral-low organic soils are visibly evident. Presumably subsidence rates are now well below 1.5 inches per year over most of that island.

General: The significance of subsidence in areas beyond 2000 feet of the levees should also

be briefly discussed since soil shrinkage is a three dimensional phenomenon and internal island subsidence could affect areas on the periphery of the island. The rationale for selecting 2,000 feet as the cutoff for priority 1 and 2 should be described.

Appendix E

More information should be given to describe how large equipment such as dredges can be prearranged or be on stand by prior to an actual emergency. The DFG and perhaps the U.S. Fish and Wildlife Service should be included on any Delta emergency management team to help ensure that environmental issues are addressed promptly.

Appendix G

* Confusion about funding overlaps with the ERPP need to be clarified. The assumptions described on page G-1 need to be revisited given comments on levee improvement cross sections made earlier in this memorandum. Those comments include:

- No appropriate cross section has been shown for work on the San Joaquin River.
- Cross section G, the wave wall, should not be used extensively.
- The report inaccurately characterizes what current legislation directs with regards to including habitat in a base level program and not simply special projects.
- The levee cross sections that should be included as potential levee improvements include alternatives I, J, K, P, and Q from Appendix G, and L if redrawn to address our comments.
- The report is inconsistent in describing the extent and configuration of levee/habitat improvements among the alternatives.

There are other assumptions that we believe are in error and need to be modified and corrected. For instance, it isn't clear why costs associated with conveyance improvements, which are clearly costs that should be borne by the water storage and conveyance part of the program should be borne by the Water Use Efficiency Program. Second, the text on page B-2 says additional levee associated habitat improvements will take place on the Sacramento River from Sacramento to Collinsville, yet the third assumption says it assumes no "significant improvements" in those areas. This should be clarified.

***Page G-2; Cost Estimate Table:** A footnote should be added to the table which clarifies

The cost summarizations may also need to be modified to address our comments. The four tables that provide more detailed cost estimates for ERPP actions are inconsistent with the diagrams shown in figures B-6 through B-8. For instance, on Brack Tract, no work is shown in figures B-7 and B-8, yet costs for Brack Tract show costs for both alternatives.

Table 4-1: This table depicts examples of levee cross sections. Several of these should be shown earlier in the this report and used to depict the extent of ERPP improvements. They include I, J, K, P, and Q. This table has appeared in other Bay/Delta documents. Its source should be identified.

An introductory paragraph should be added prior to the various islands and the map plates for Reclamation Districts so that the purpose for including them is clarified.

This concludes our comments. We recognize that there was not time to develop several important elements of the Program such as cost sharing and levee maintenance. We look forward to reviewing those components when they are completed.

Thank you for the opportunity to review and comment on this report. If you or your staff have any questions about our comments or wish to discuss them further please contact Mr. Frank Wernette at CALNET 8-423-7800 or Mr. Ed Littrell at CALNET 8-434-2924.

Pete Chadwick
DFG/CALFED Liaison

cc: Mr. Frank Wernette, BDD
Mr. Ed Littrell, R2

bc: Mr. Jim White, ESD
Mr. Harry Rectenwald, R1
Mr. Bill Loudermilk, R4
Mr. Dan Gifford, R2
Mr. Gary Hobgood, R2
Ms. Pat Brantley, BDD
Ms. Heather McIntire, BDD
Mr. Alan Baracco, IFD

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